

REMARKS/ARGUMENTS

Claims 1-10, 24, 25 and 26-33 are active. Page 7 of the specification has been amended to correct a typographical error which is apparent from the surrounding context of the disclosure. The amendment of claim 2 finds support on page 7, lines 6-16 of the specification. The lithium batteries of claim 26 are disclosed at least at the bottom of page 19 of the specification. Claim 27 finds support in the Inventive Examples starting on page 21 of the specification. Claim 28 finds support on page 6, lines 24 ff. of the specification and in the Examples. Claims 29-30 find support in the second full paragraph on page 7 of the specification and in original claim 10. New claims 31-33 find support in the section bridging pages 7-8 of the specification. No new matter has been added.

Restriction/Election

The Applicants previously elected without traverse **Group I**, claims 1-10 and 24-25, drawn to a lithium battery separator having a shutdown function. Claims 11-22, drawn to a process for producing a separator were withdrawn from consideration and have been cancelled. The Applicants respectfully request that claims directed to any nonelected subject matter which depend from or otherwise include all the limitations of an allowed elected claim, be rejoined upon an indication of allowability for the elected claim, see MPEP 821.04.

Rejection—35 U.S.C. §112, second paragraph

Claims 1-25 were rejected under 35 U.S.C. 112, second paragraph, as being indefinite. This rejection is moot in view of the amendments above.

Rejection—35 U.S.C. §103(a)

Claims 1-8, 10, and 24-25 were rejected under 35 U.S.C. §103(a) as being unpatentable over Bauer, et al., U.S. Patent No. 6,632,561, in view of Hying, et al., WO 99/62620.

Bauer is cited as disclosing a lithium battery with a shutdown function. Col. 2, lines 26-28 disclose:

. . .a separator which . . .has a shutdown mechanism and, furthermore, has dimensional stability at high temperature (> 150°C).

Col. 26, lines 25-49 disclose various types of separators, but do not disclose one comprising a porous carrier “having a porous inorganic, nonelectroconductive coating layer” as required by claim 1 or a fully ceramic coating layer required by claim 28. This deficit in Bauer is acknowledged on page 4, lines 5-6 of the Official Action.

Hying, claim 22, was cited as teaching what was missing from Bauer, namely a porous carrier having an inorganic, **non-electroconductive** coating. However, claim 29 of Hying does not disclose this. Instead it indicates the “composite material exhibits ion-conducting properties” and that it “is provided on at least one side of the support and in the pores with at least one inorganic component, which comprises. . .a metal, semi-metal, or a mixed metal”. Thus, while the Hying coating is inorganic, it does not appear to be non-electroconductive as required by claim 1, since metals are well-known electron conductors. Moreover, while claim 22 indicates that the composite material contains other ingredients, such as certain fluoropolymers, these too are described as being “ion conducting”. The abstract and col. 1, lines 41-45 also do not disclose non-electroconductive coating required by claim 1.

The prior art cannot render the invention obvious because it does not disclose all the elements of the invention, nor does it suggest a non-electroconductive coating to which a shutdown layer is applied. Accordingly, the Applicants respectfully request that this rejection be withdrawn.

Rejection—35 U.S.C. §103(a)


Claim 9 was rejected under 35 U.S.C. §103(a) as being unpatentable over Bauer, et al., U.S. Patent No. 6,632,561, in view of Hying, et al., WO 99/62620 as applied to claims 1-8, 10 and 24-25, and further in view of Treger, et al., U.S. Patent No. 5,091,272. The primary references have been discussed above and Treger was cited as teachings the thickness of the shutdown layer required by claim 9. However, Treger does not remedy the deficits of the two primary references as discussed above, thus this rejection may also be withdrawn.

Conclusion

In view of the amendments and remarks above, the Applicants respectfully submit that this application is now in condition for allowance. An early notice to that effect is earnestly solicited.

Respectfully submitted,

OBLON, SPIVAK, McCLELLAND,
MAIER & NEUSTADT, P.C.
Norman F. Oblon



Thomas M. Cunningham, Ph.D.
Registration No. 45,394